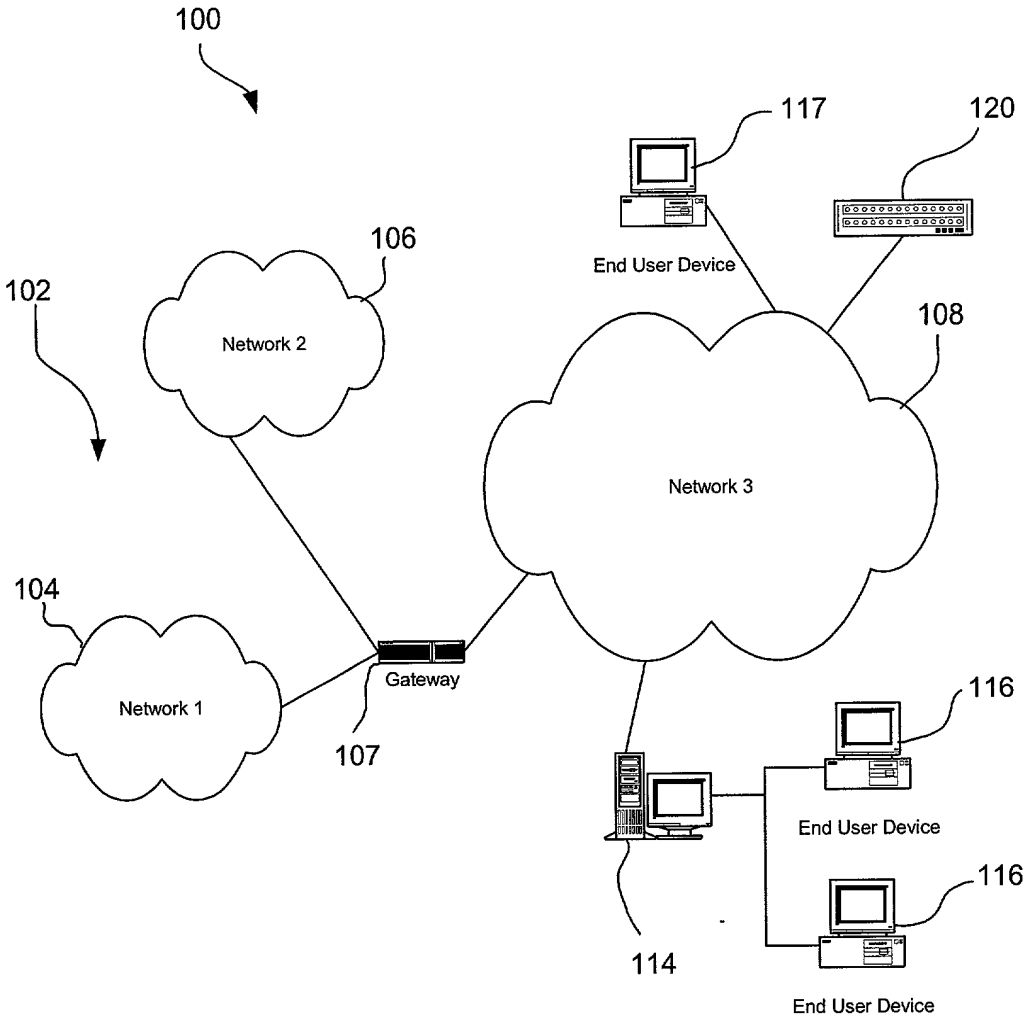
100
102
104
106
107
108
114
116
116
117
120
Network 1
Network 2
Network 3
Gateway
End User Device
End User Device
End User Device

Figure 1

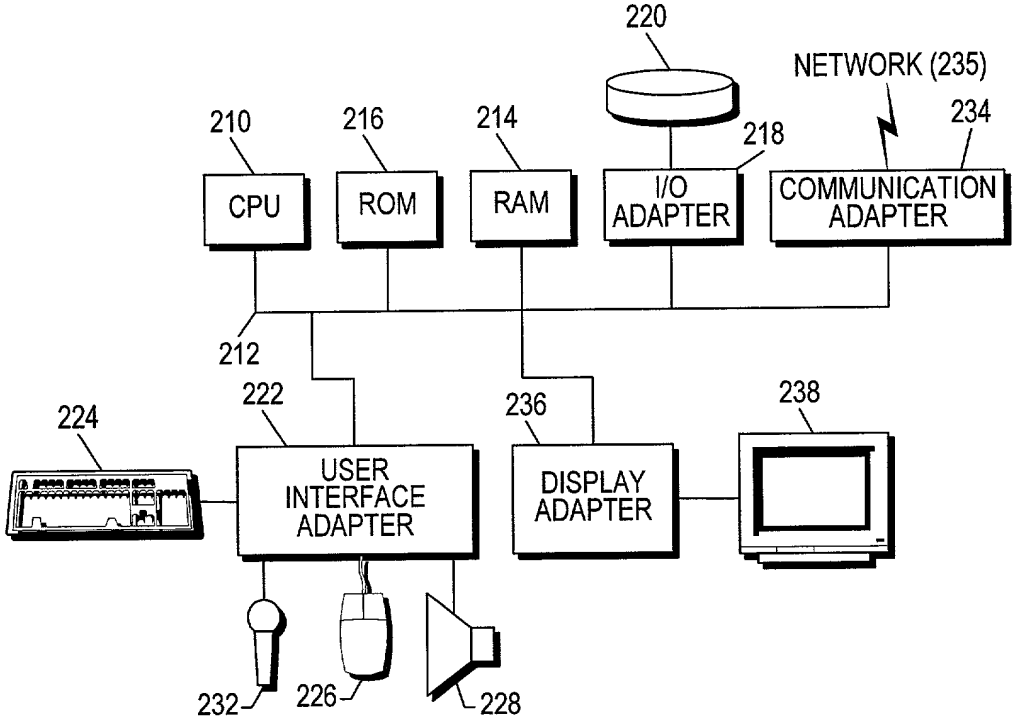
220
NETWORK (235)
210
216
214
218
234
CPU
ROM
RAM
I/O ADAPTER
COMMUNICATION ADAPTER
212
222
236
238
224
USER INTERFACE ADAPTER
DISPLAY ADAPTER
232
226
228

Figure 2

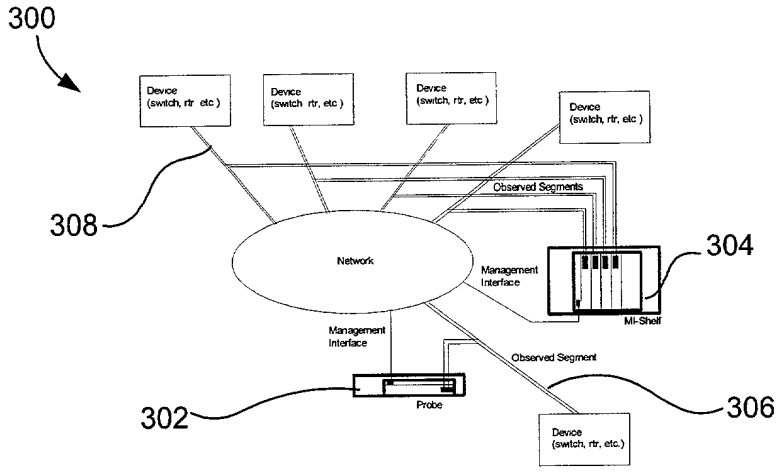

Figure 3

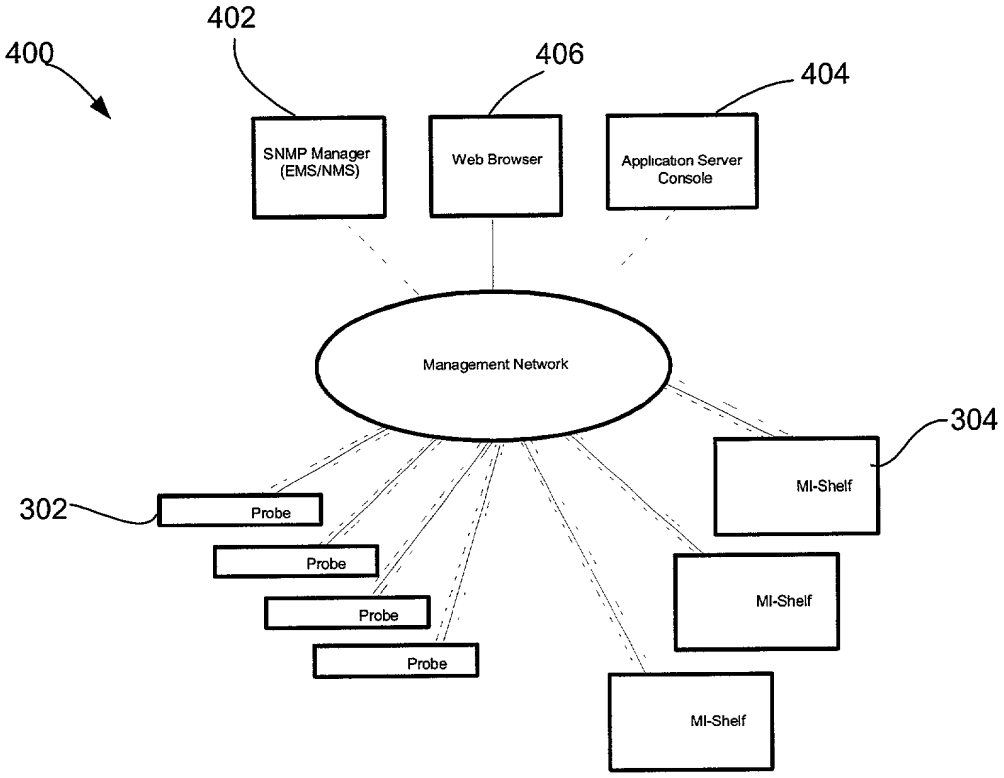

Figure 4

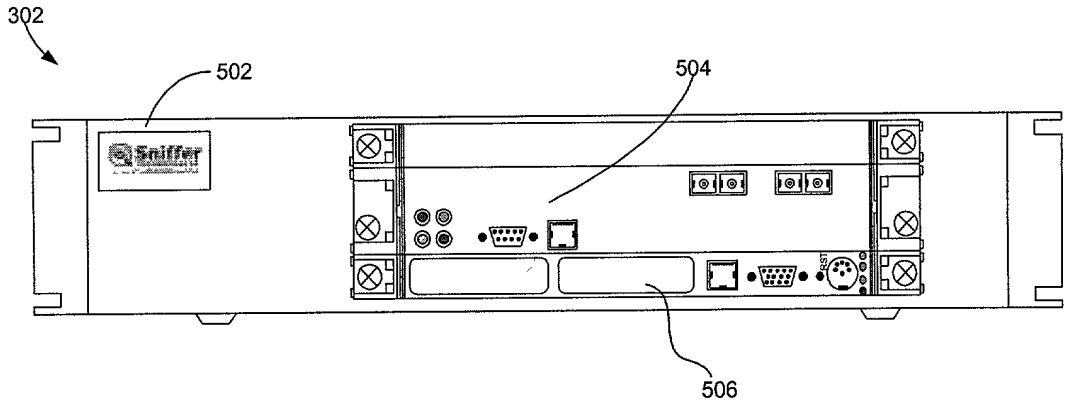

Figure 5

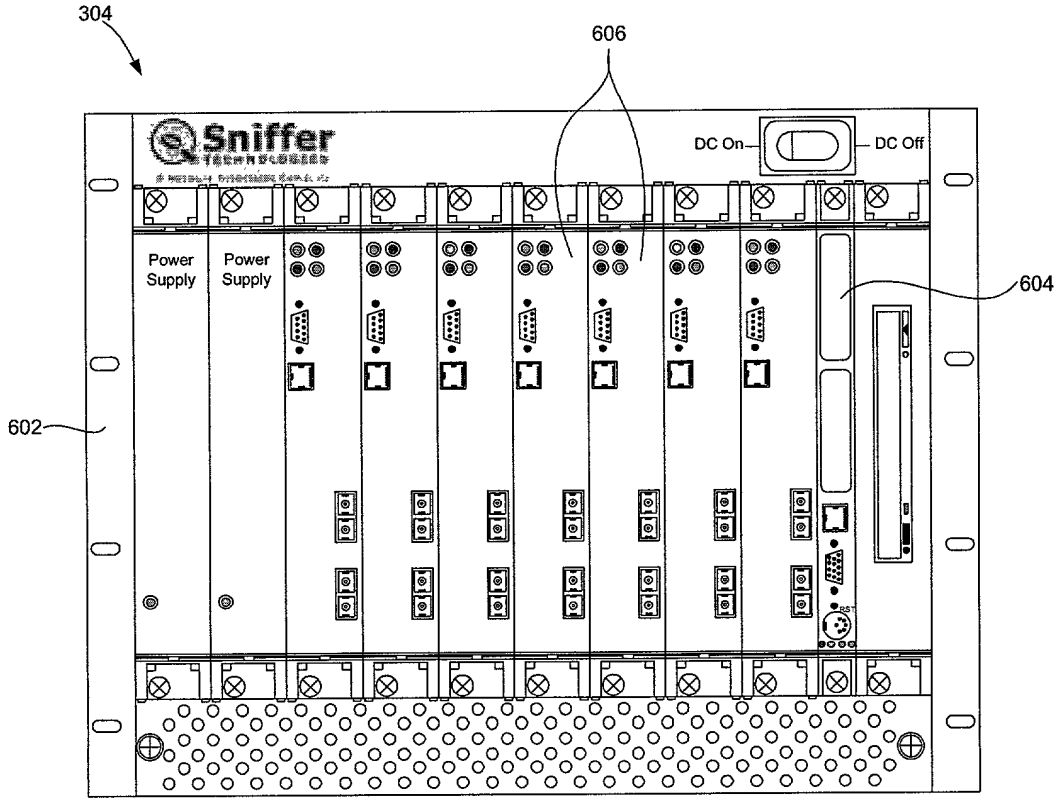

Figure 6

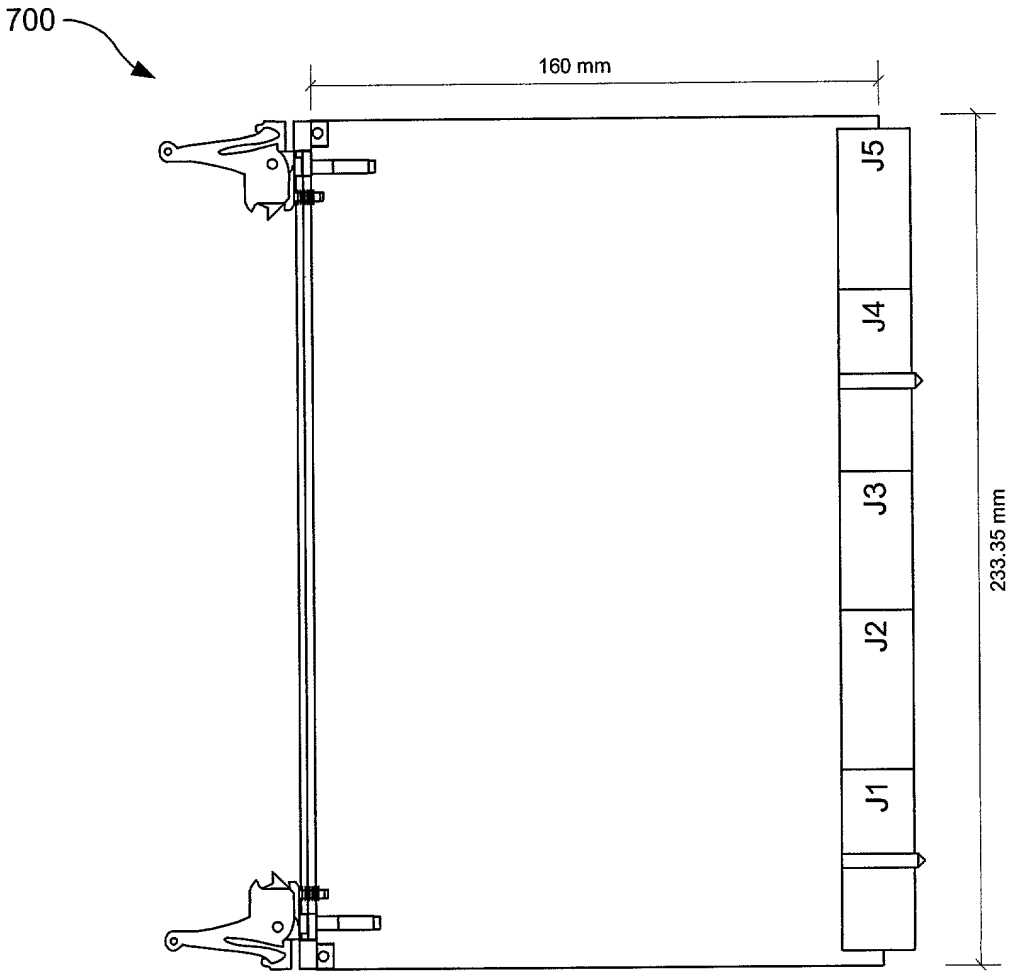

Figure 7

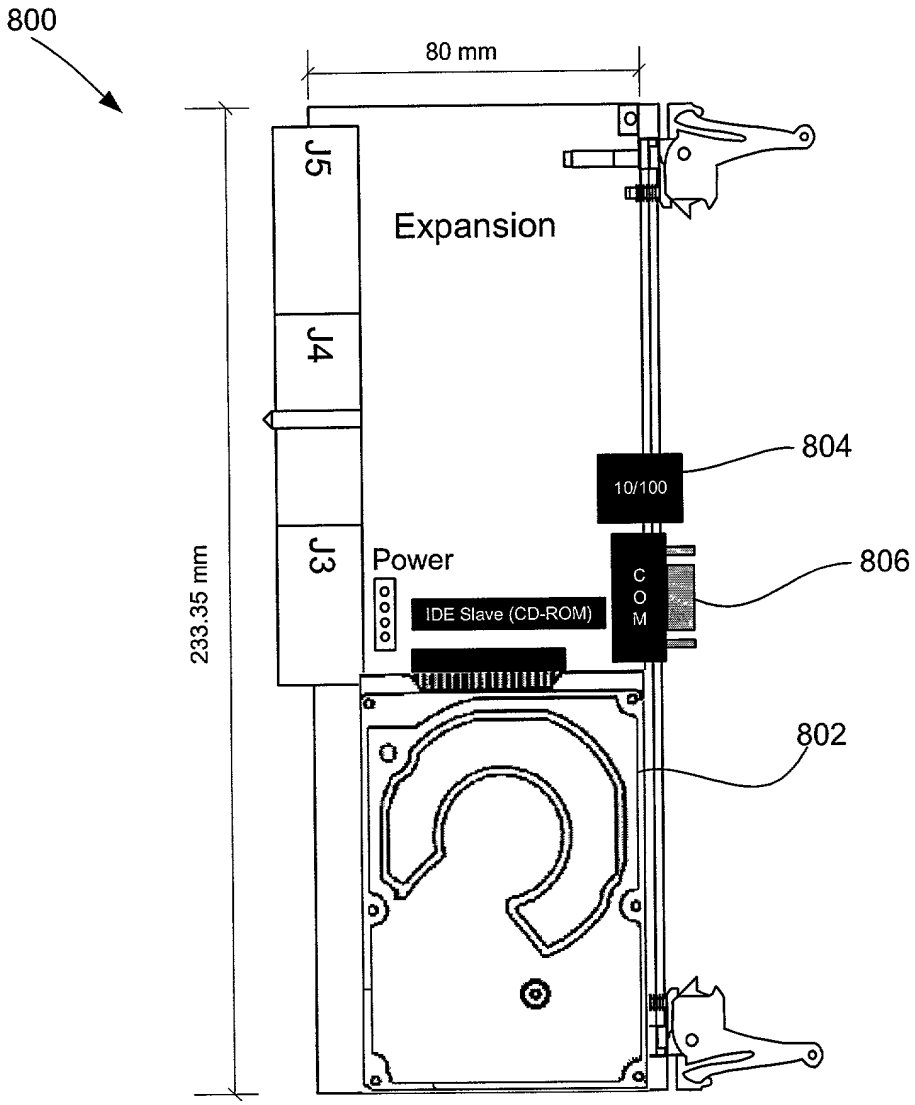
800
80 mm
J5
Expansion
J4
804
10/100
J3
Power
806
C
O
M
IDE Slave (CD-ROM)
233.35 mm
802

Figure 8

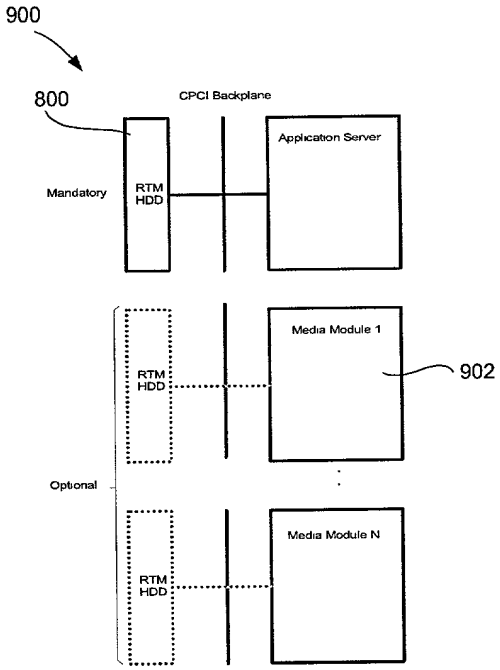

Figure 9A

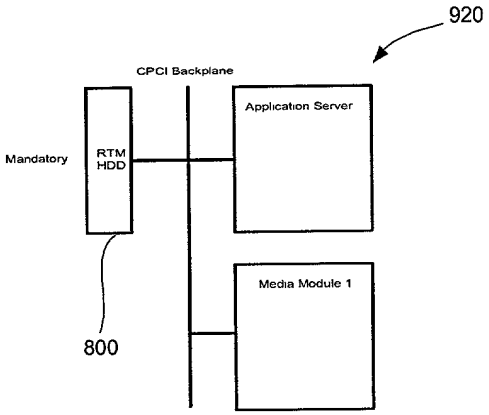

Figure 9B

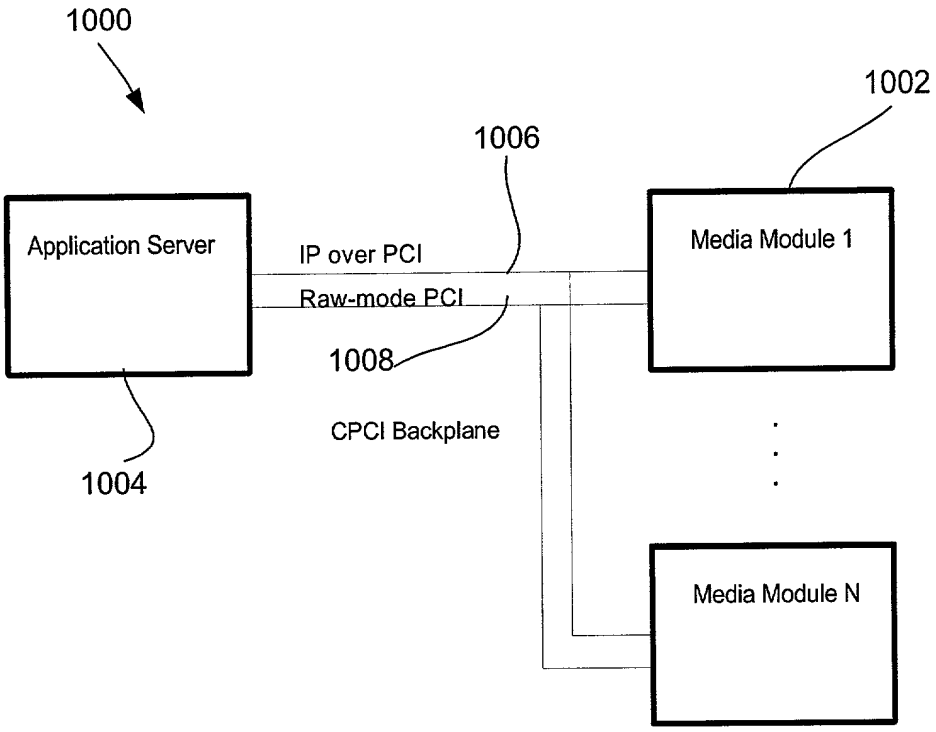
1000
1002
1006
Application Server
IP over PCI
Raw-mode PCI
Media Module 1
1008
CPCI Backplane
1004
Media Module N

Figure 10

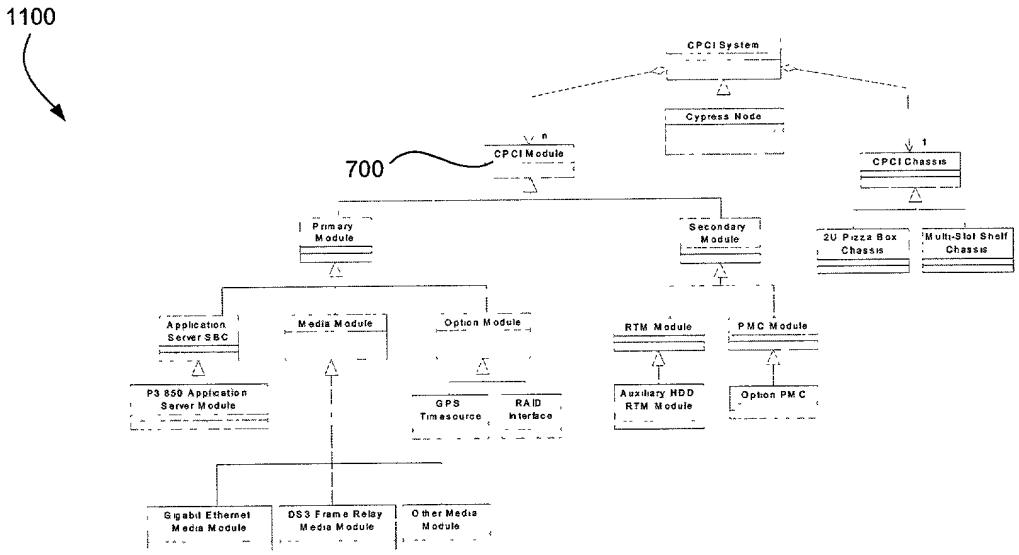
1100
700
CPCI System
Cypress Node
CPCI Module
CPCI Chassis
Primary Module
Secondary Module
2U Pizza Box Chassis
Multi-Slot Shelf Chassis
Application Server SBC
Media Module
Option Module
RTM Module
PMC Module
P3 850 Application Server Module
GPS Timesource
RAID Interface
Auxiliary HDD RTM Module
Option PMC
Gigabit Ethernet Media Module
DS3 Frame Relay Media Module
Other Media Module

Figure 11

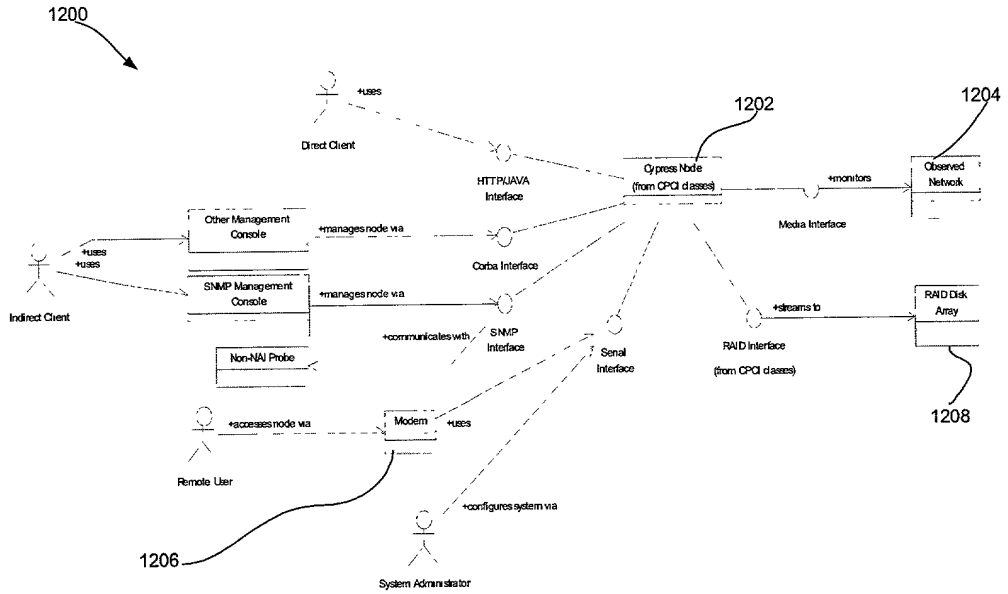

Figure 12

1300

User Class	Operations Allowed
Network Administrators	System turn-up & configuration, add users, etc.
Business Users (CIO)	View reports, trends, accounting info, etc.
Security Managers	Access users e-mail, web activity, policies, etc.
Network Planners	Access to capacity, trend, load & distribution info.
Network Managers	General access to all but security related.
Network Technicians	Access to diagnostics, alarms, trace files, etc.

Figure 13

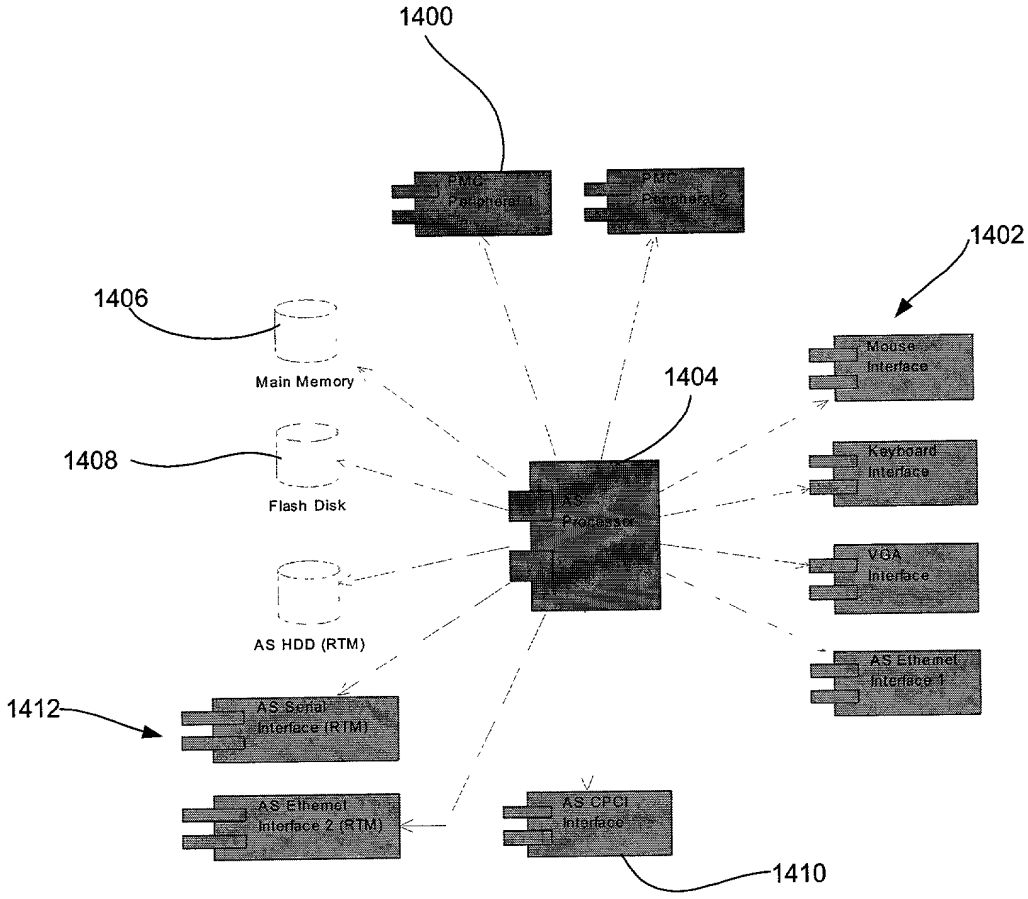
1400
PMC Peripheral 1
PMC Peripheral 2
1402
1406
Main Memory
1404
Mouse Interface
1408
Flash Disk
AS Processor
Keyboard Interface
VGA Interface
AS HDD (RTM)
AS Ethernet Interface 1
1412
AS Serial Interface (RTM)
AS Ethernet Interface 2 (RTM)
AS CPCI Interface
1410

Figure 14

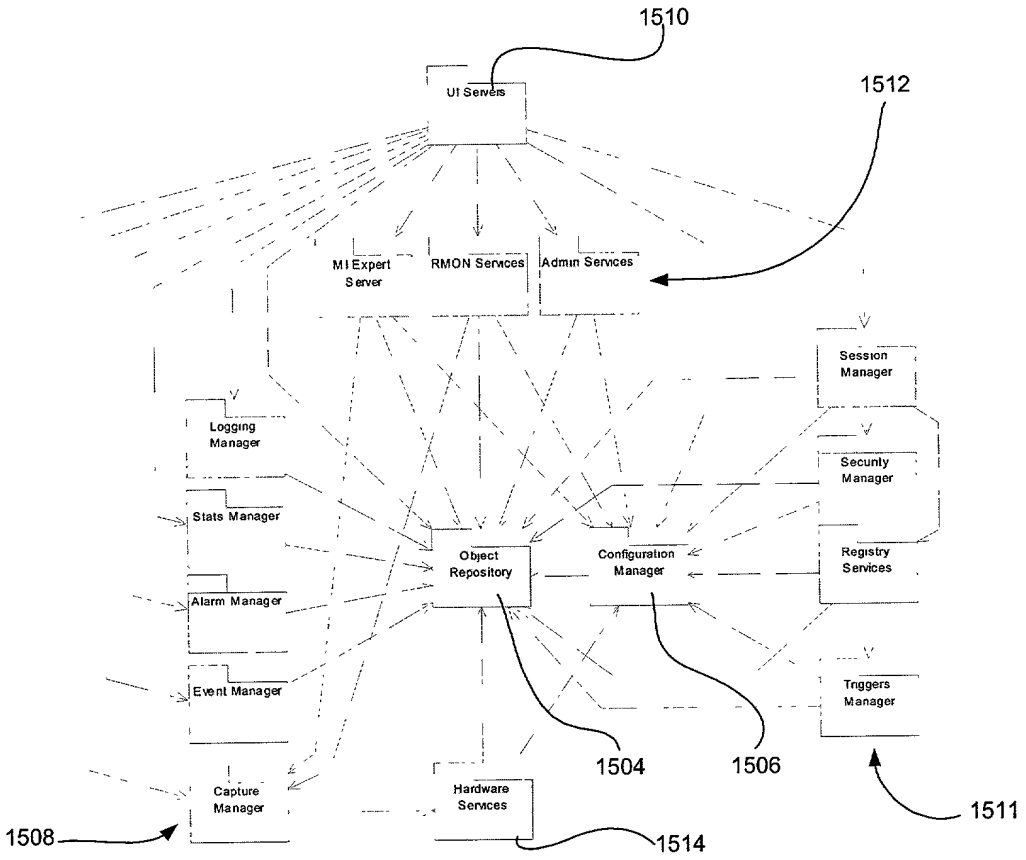

Figure 15

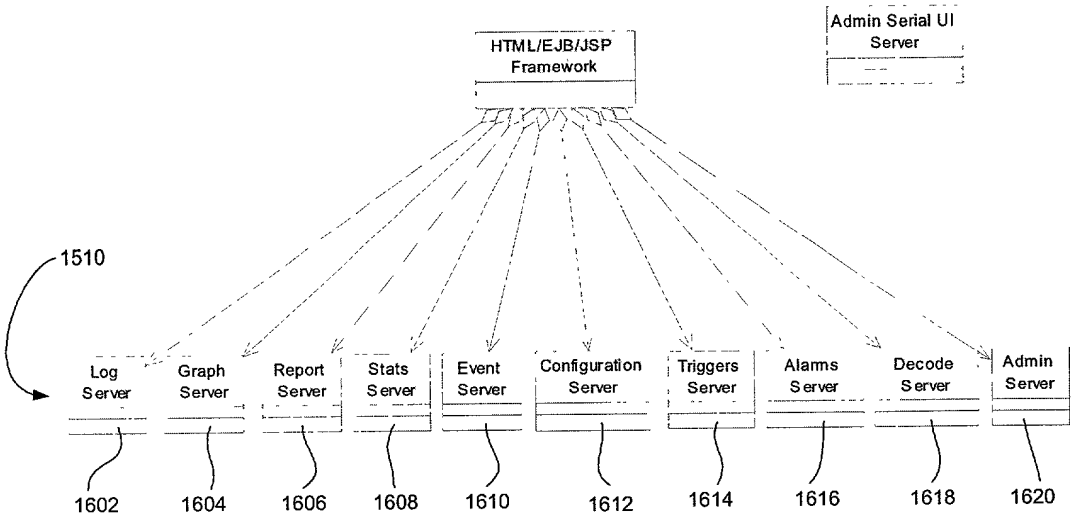

Figure 16

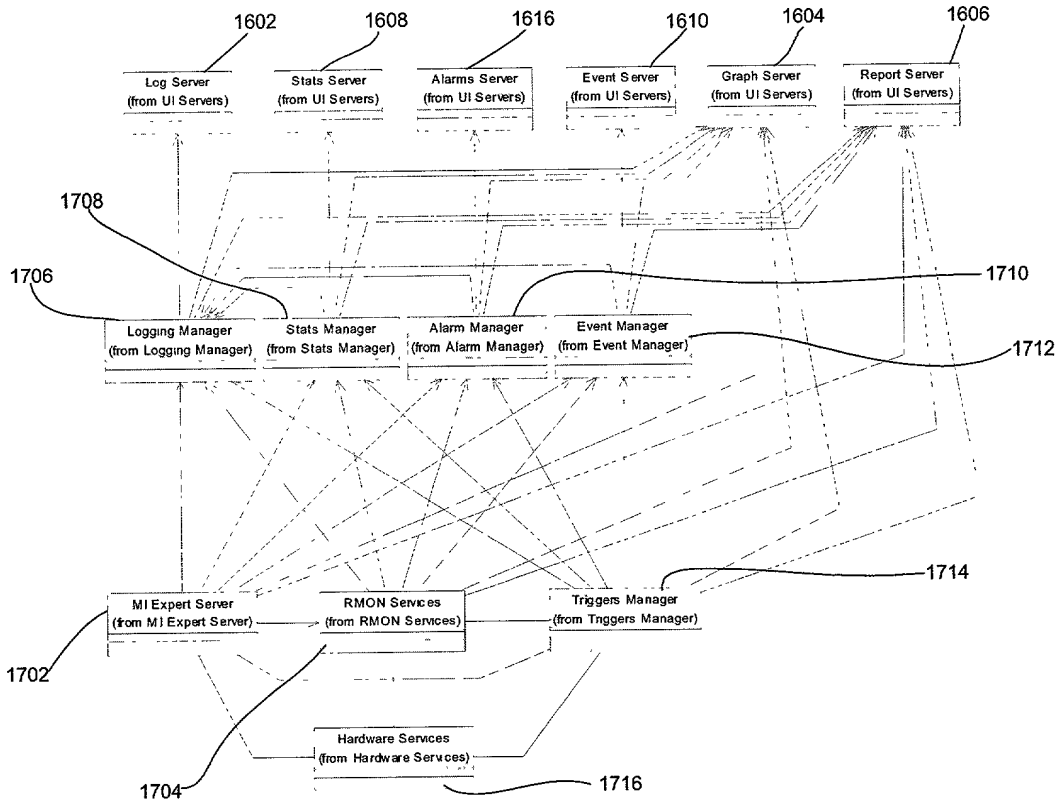
1602
1608
1616
1610
1604
1606
Log Server
(from UI Servers)
Stats Server
(from UI Servers)
Alarms Server
(from UI Servers)
Event Server
(from UI Servers)
Graph Server
(from UI Servers)
Report Server
(from UI Servers)
1708
1706
1710
Logging Manager
(from Logging Manager)
Stats Manager
(from Stats Manager)
Alarm Manager
(from Alarm Manager)
Event Manager
(from Event Manager)
1712
1714
MI Expert Server
(from MI Expert Server)
RMON Services
(from RMON Services)
Triggers Manager
(from Triggers Manager)
1702
Hardware Services
(from Hardware Services)
1704
1716

Figure 17

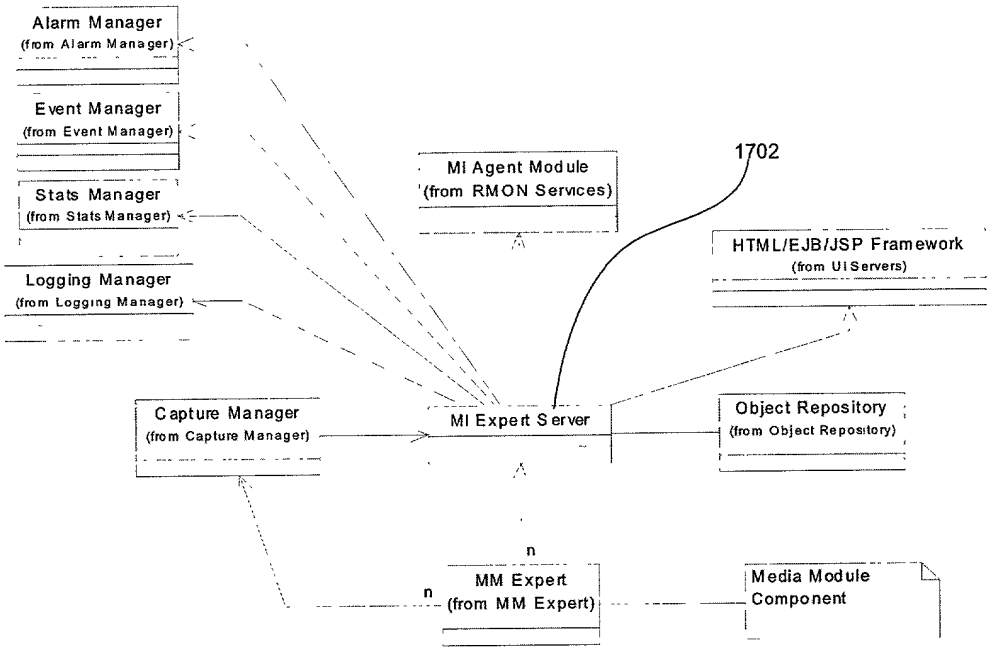

Figure 18

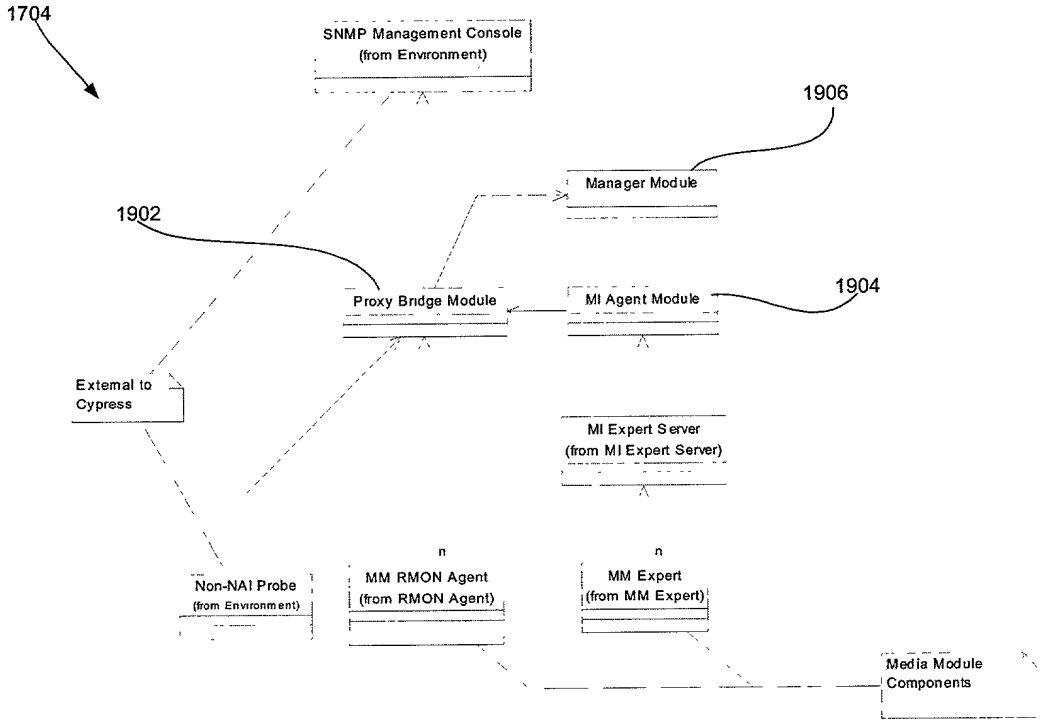

Figure 19

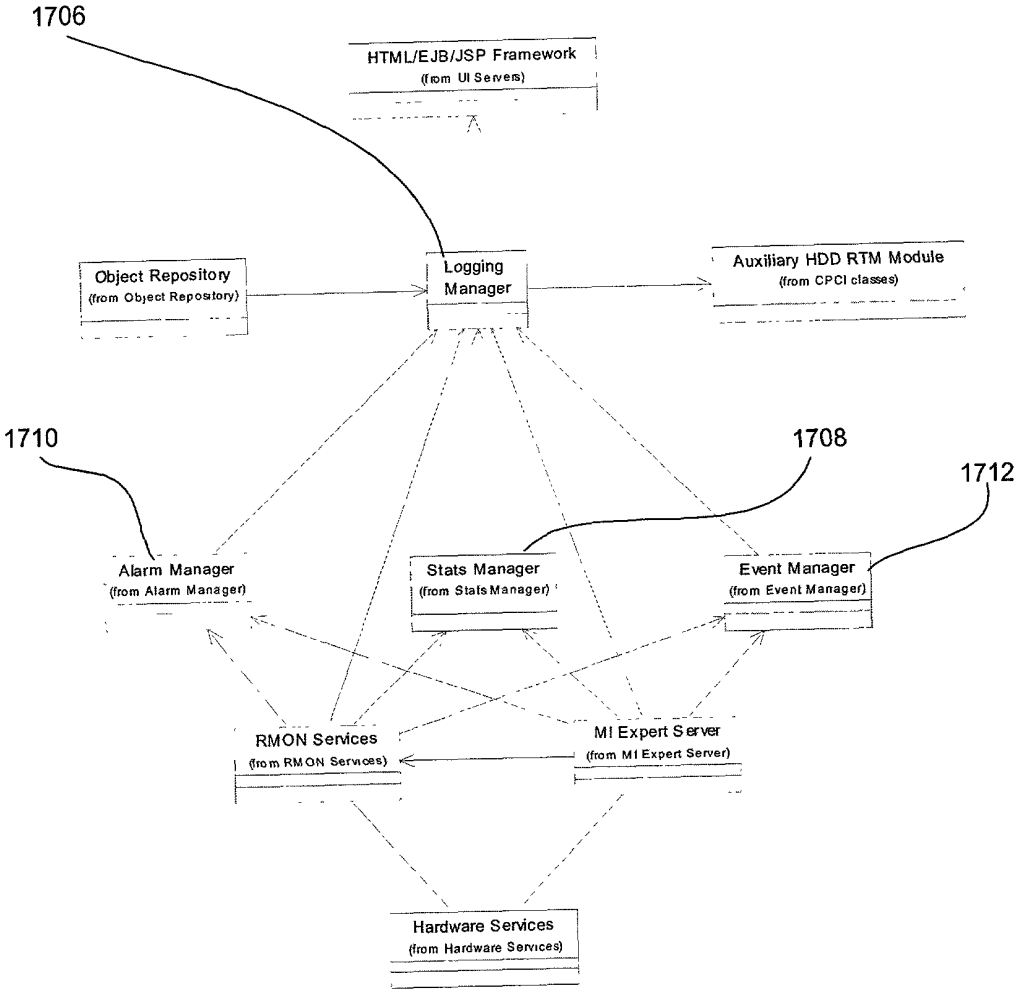
1706
HTML/EJB/JSP Framework
(from UI Servers)
Object Repository
(from Object Repository)
Logging Manager
Auxiliary HDD RTM Module
(from CPCI classes)
1710
1708
1712
Alarm Manager
(from Alarm Manager)
Stats Manager
(from Stats Manager)
Event Manager
(from Event Manager)
RMON Services
(from RMON Services)
MI Expert Server
(from MI Expert Server)
Hardware Services
(from Hardware Services)

Figure 20

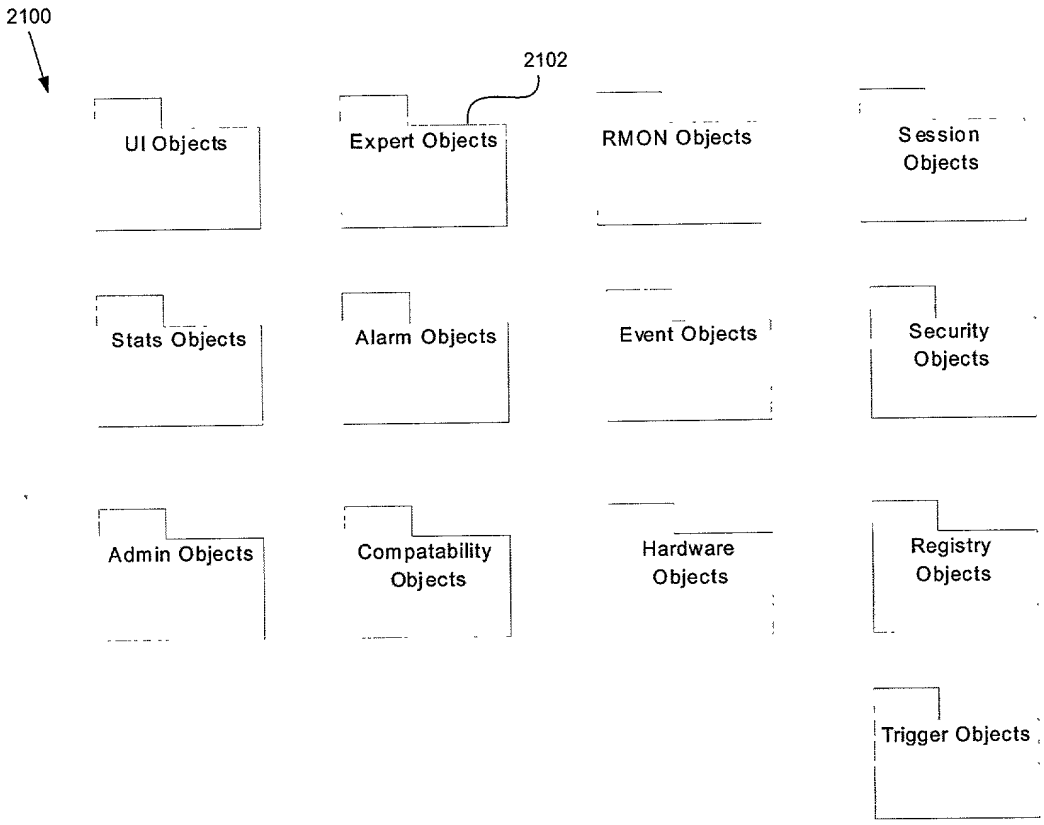

Figure 21

Exhibit 1004, p. 1004

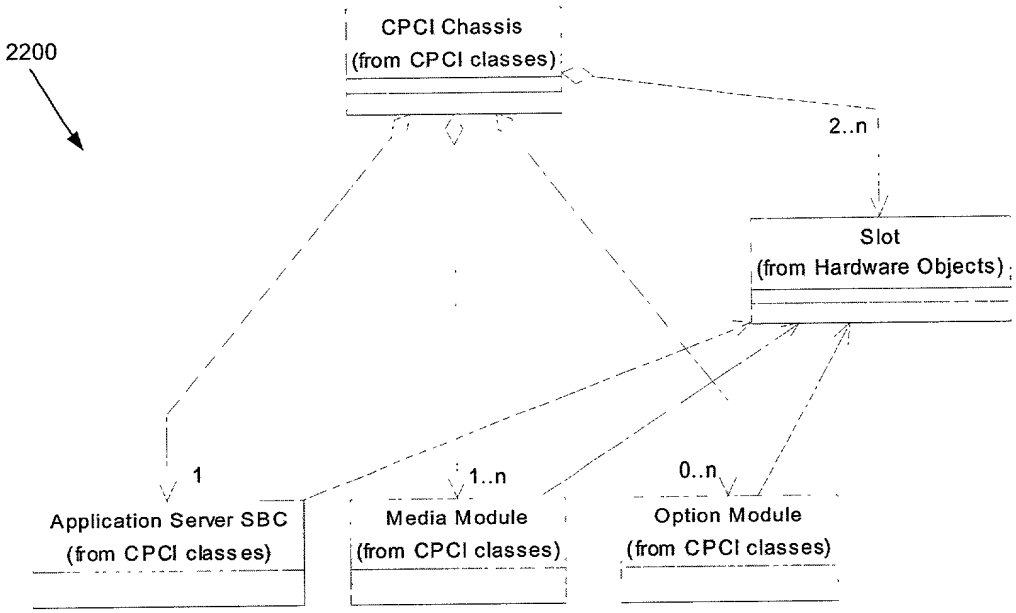

Figure 22A

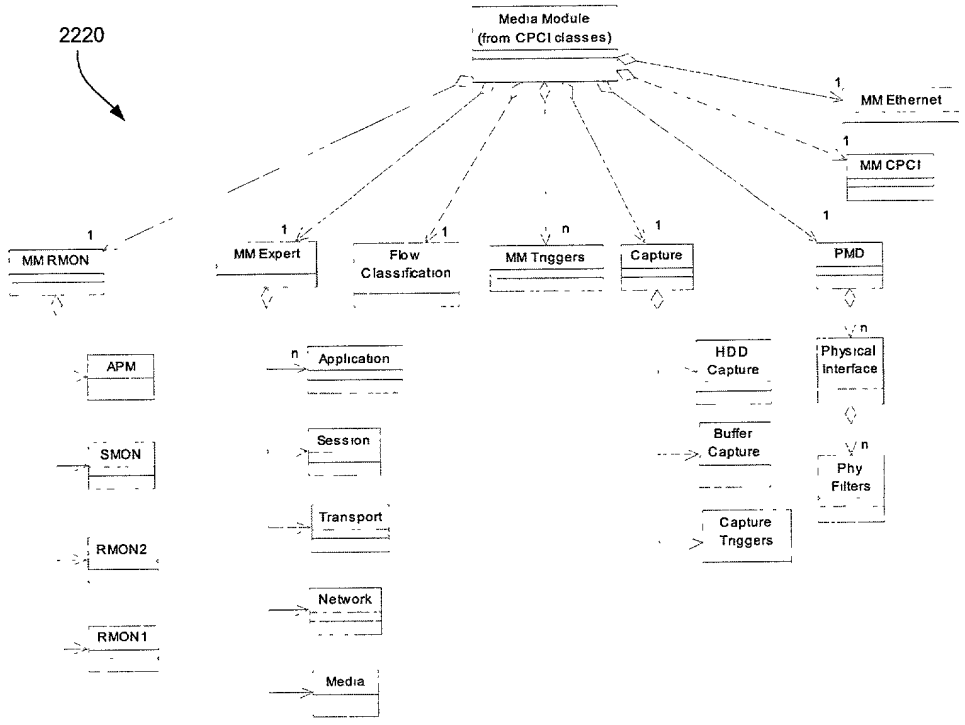

Figure 22B

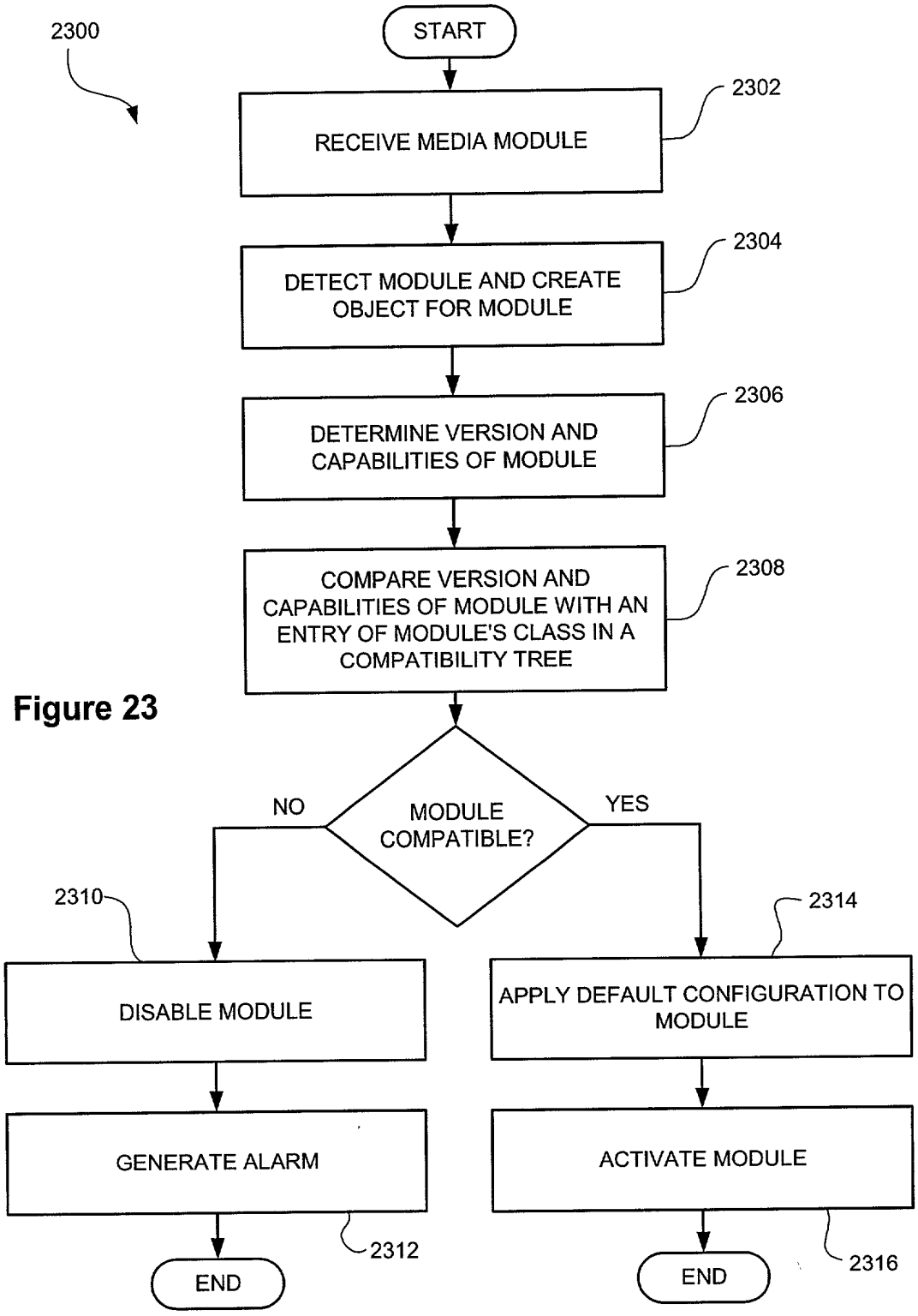

Figure 23

Page 1 of 1 - 2/3/2005 - 9:47:26 AM

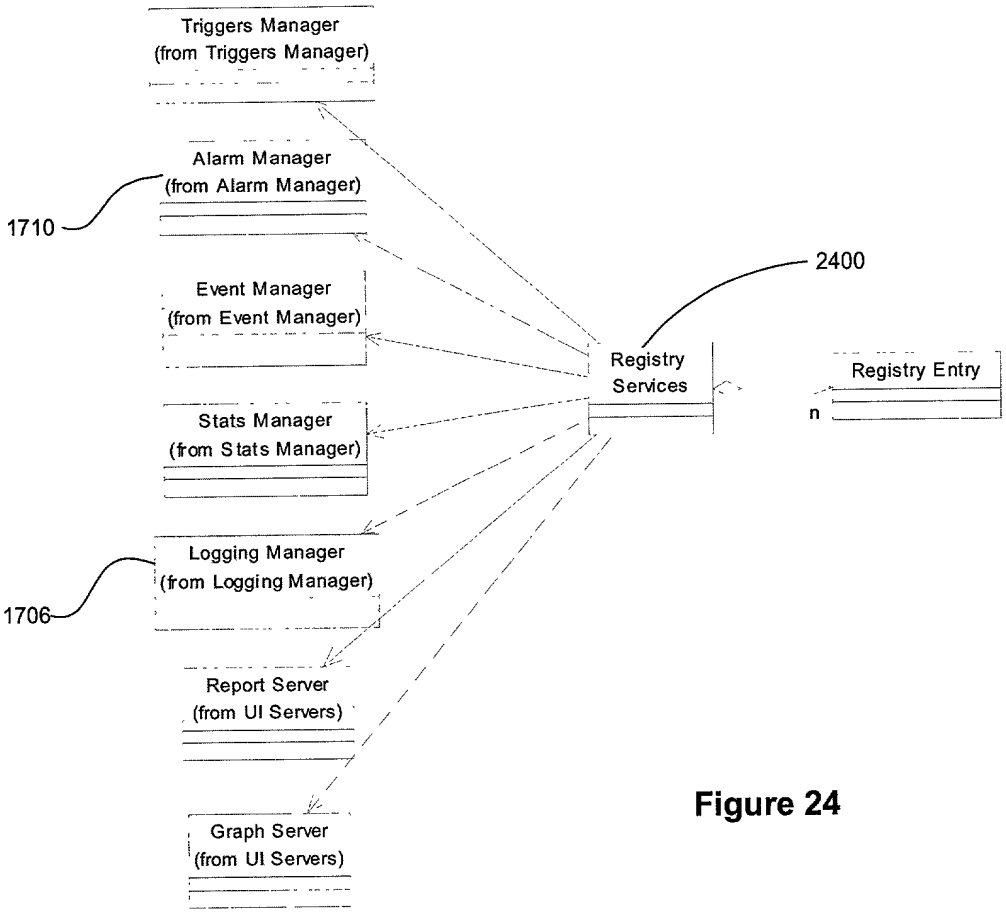
Triggers Manager
(from Triggers Manager)
Alarm Manager
(from Alarm Manager)
1710
Event Manager
(from Event Manager)
2400
Registry
Services
Registry Entry
n
Stats Manager
(from Stats Manager)
Logging Manager
(from Logging Manager)
1706
Report Server
(from UI Servers)
Graph Server
(from UI Servers)

Figure 24

autocapture

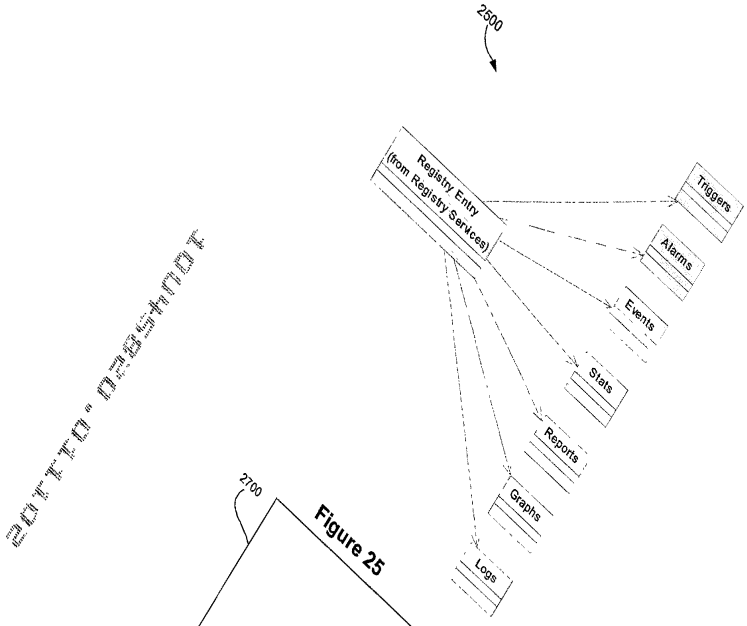

Figure 25

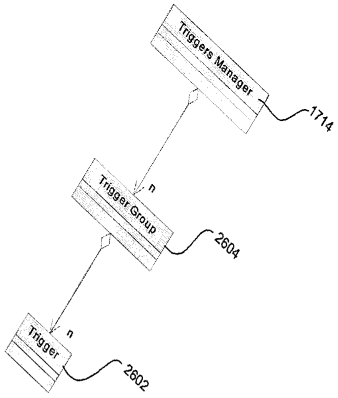

Figure 26

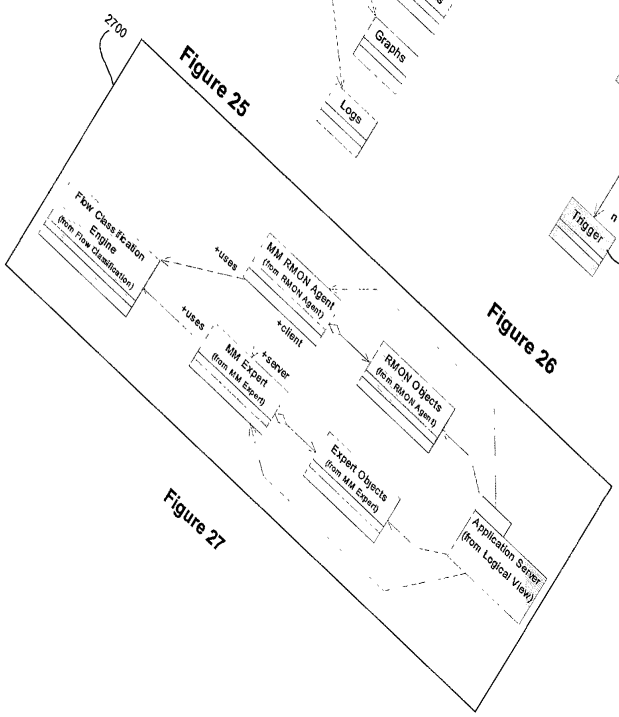

Figure 27

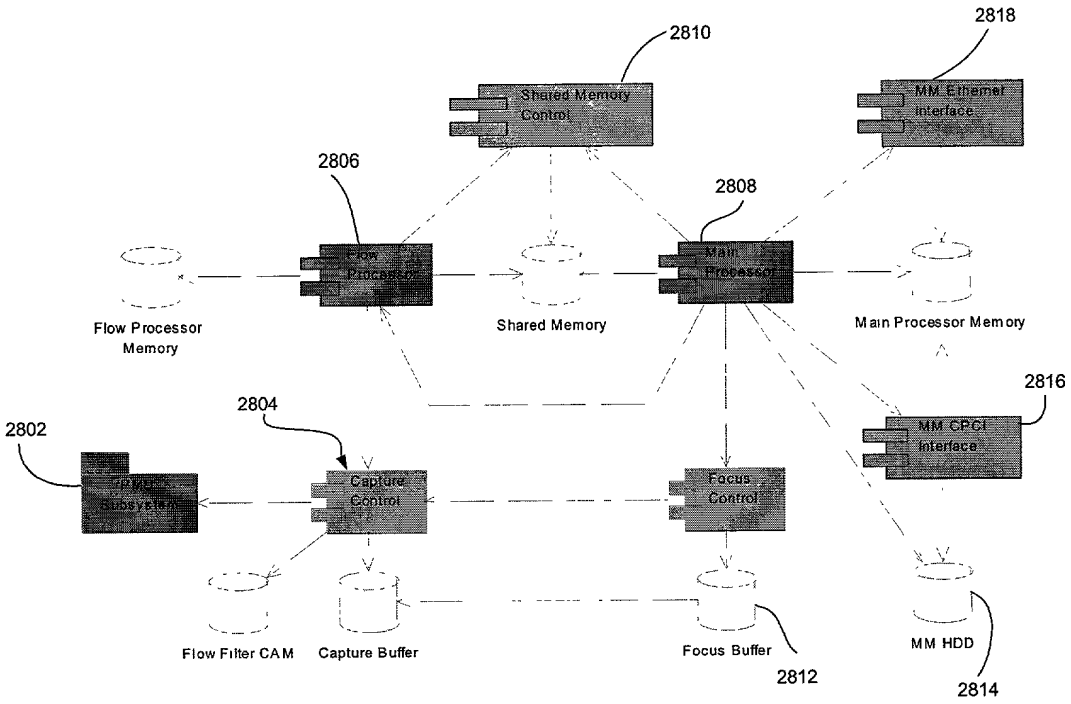

Figure 28

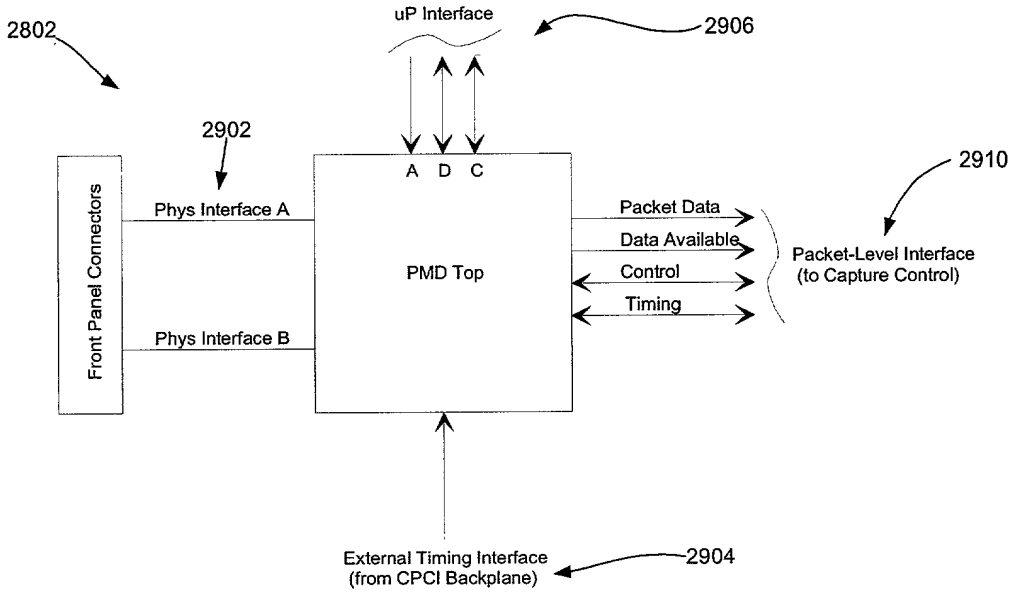

Figure 29

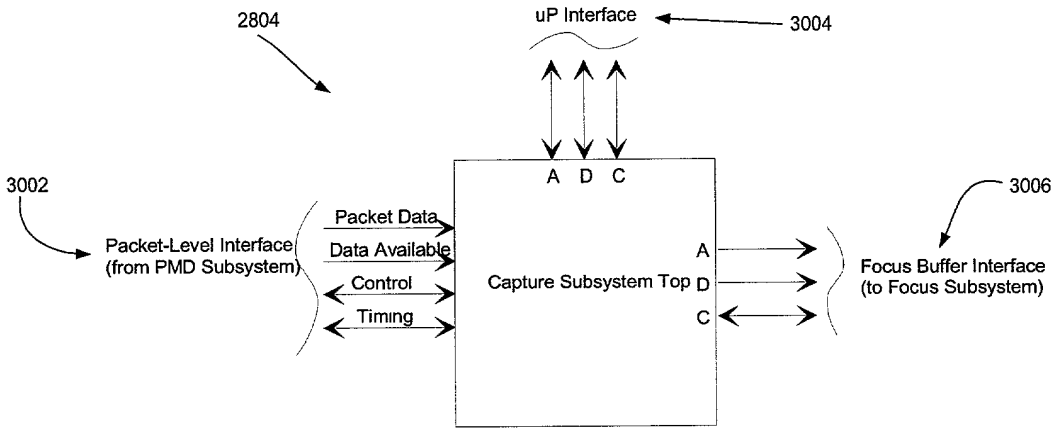

Figure 30

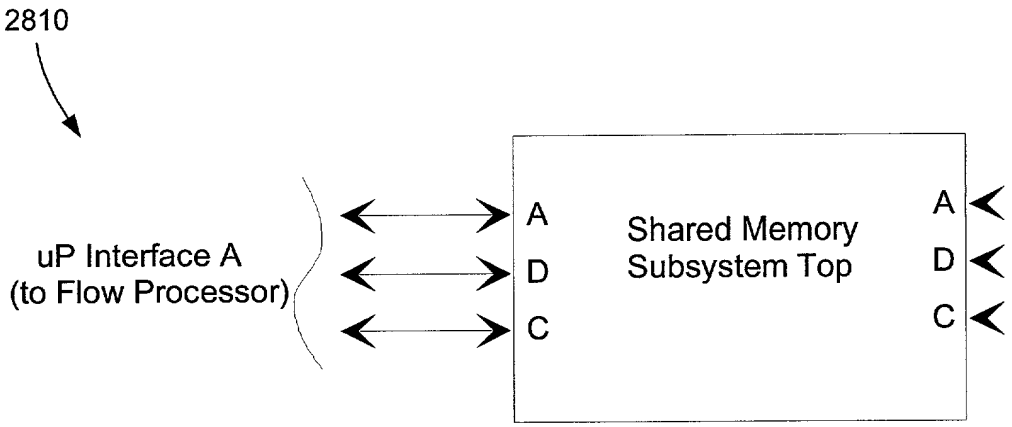

Figure 31

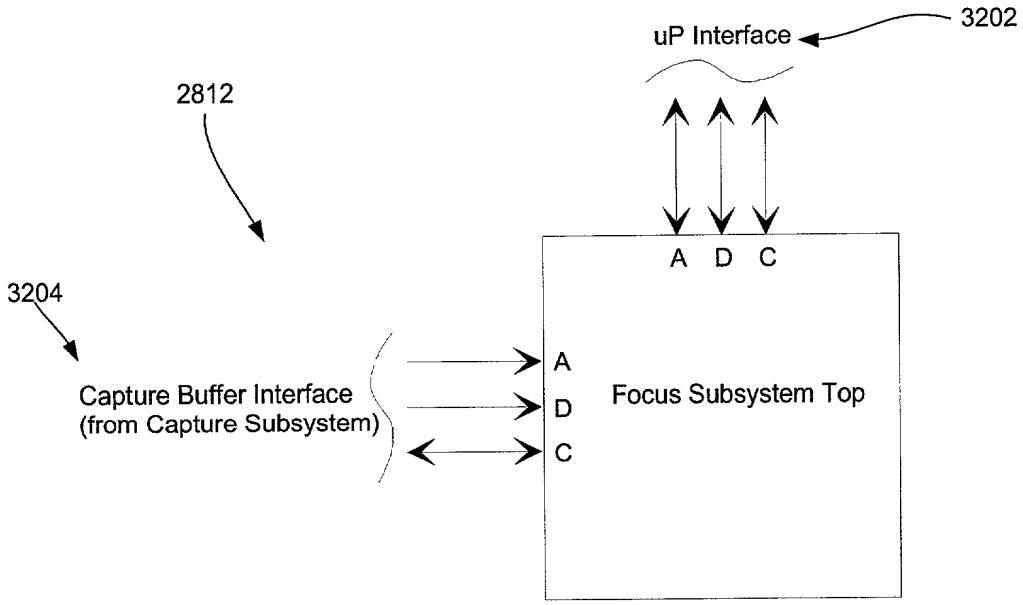
uP Interface
3202
2812
A D C
3204
Capture Buffer Interface
(from Capture Subsystem)
A
D
C
Focus Subsystem Top

Figure 32

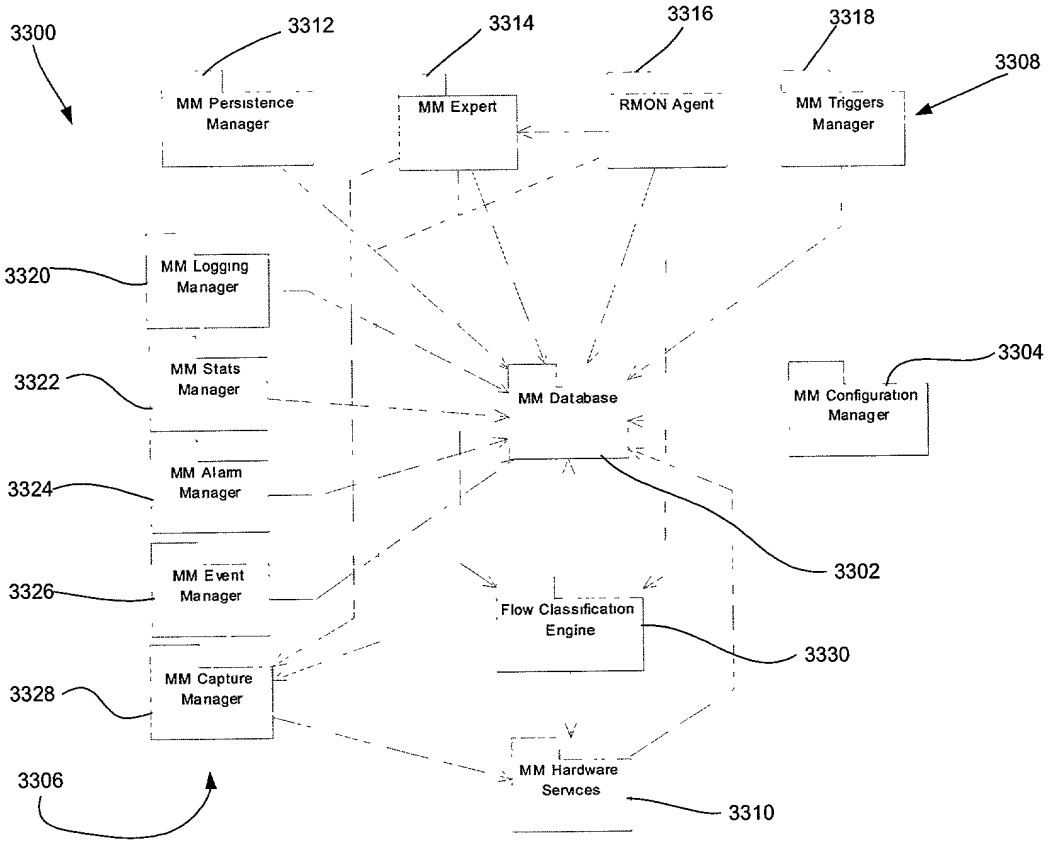
3300
3312
3314
3316
3318
3308
MM Persistence Manager
MM Expert
RMON Agent
MM Triggers Manager
3320
MM Logging Manager
3322
MM Stats Manager
MM Database
3304
MM Configuration Manager
3324
MM Alarm Manager
3302
3326
MM Event Manager
Flow Classification Engine
3330
3328
MM Capture Manager
3306
MM Hardware Services
3310

Figure 33

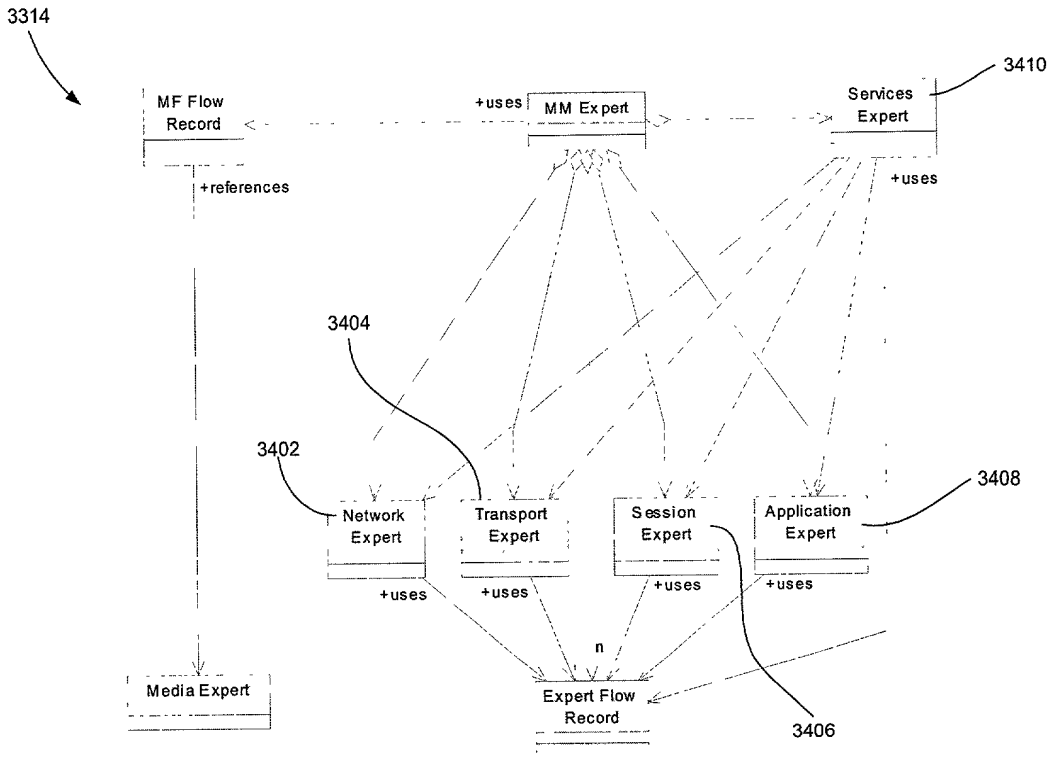
3314
MF Flow Record
+uses
MM Expert
Services Expert
3410
+references
+uses
3404
3402
3408
Network Expert
Transport Expert
Session Expert
Application Expert
+uses
+uses
+uses
+uses
n
Media Expert
Expert Flow Record
3406

Figure 34

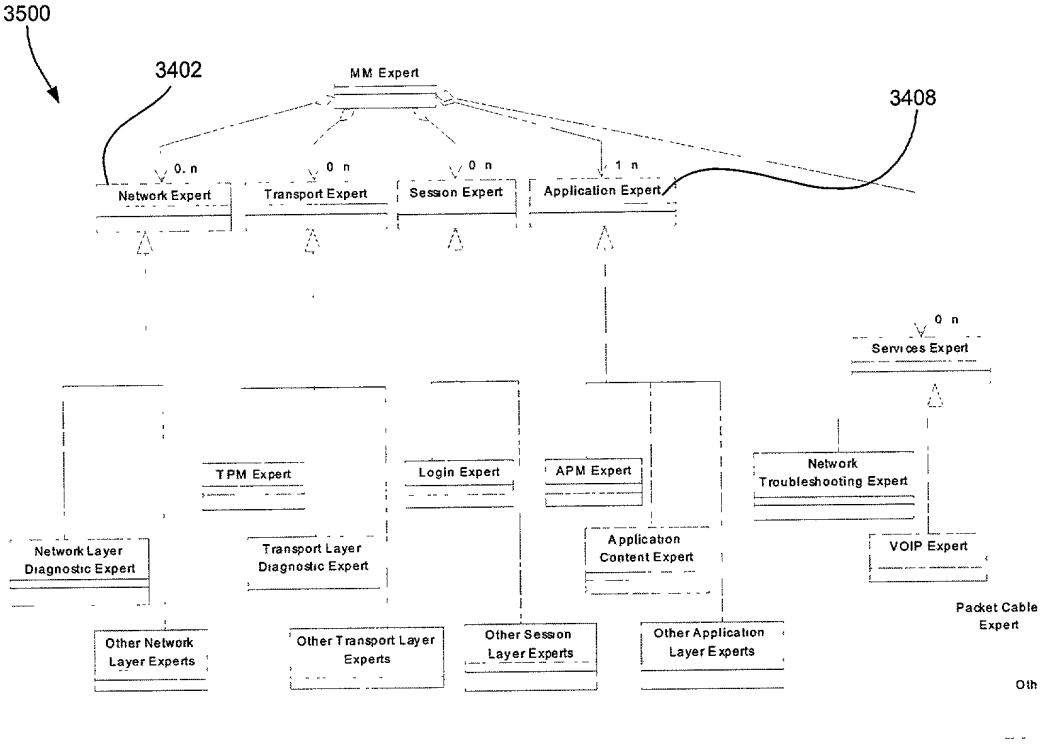
3500
3402
MM Expert
3408
0..n
0..n
0..n
1..n
Network Expert
Transport Expert
Session Expert
Application Expert
0..n
Services Expert
TPM Expert
Login Expert
APM Expert
Network Troubleshooting Expert
Network Layer Diagnostic Expert
Transport Layer Diagnostic Expert
Application Content Expert
VOIP Expert
Packet Cable Expert
Other Network Layer Experts
Other Transport Layer Experts
Other Session Layer Experts
Other Application Layer Experts
Oth

Figure 35

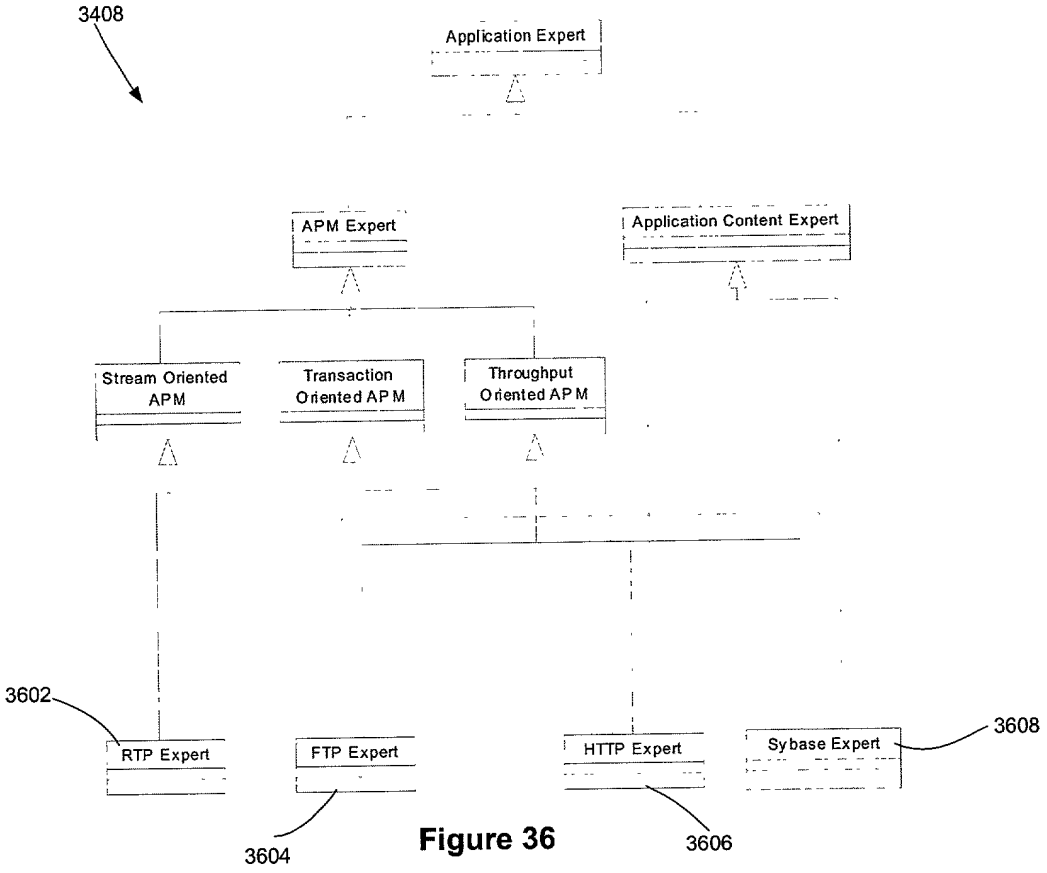
3408
Application Expert
APM Expert
Application Content Expert
Stream Oriented APM
Transaction Oriented APM
Throughput Oriented APM
3602
RTP Expert
FTP Expert
HTTP Expert
Sybase Expert
3608
3604
3606

Figure 36

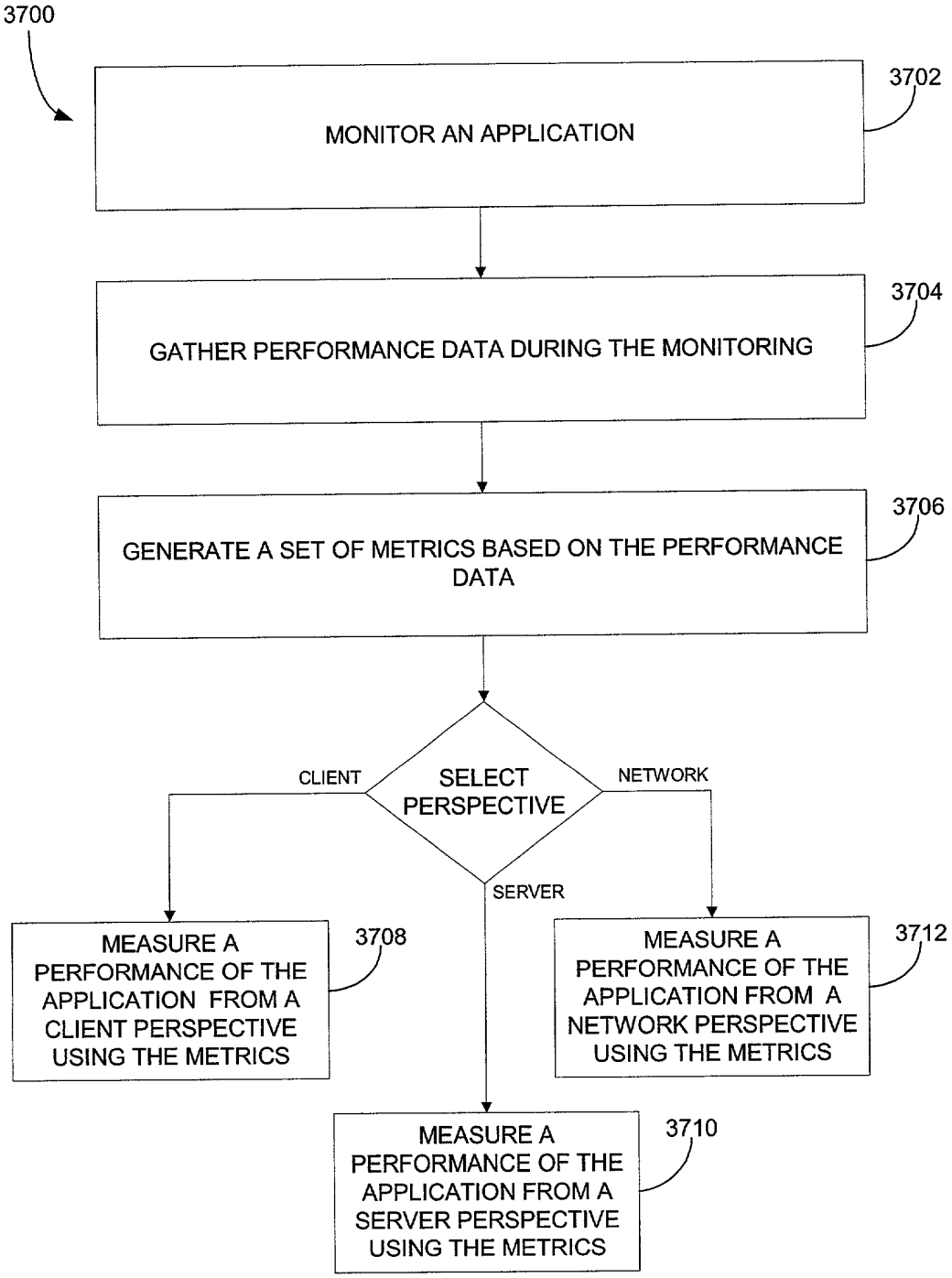
3700
MONITOR AN APPLICATION
3702
GATHER PERFORMANCE DATA DURING THE MONITORING
3704
GENERATE A SET OF METRICS BASED ON THE PERFORMANCE DATA
3706
SELECT PERSPECTIVE
CLIENT
NETWORK
SERVER
MEASURE A PERFORMANCE OF THE APPLICATION FROM A CLIENT PERSPECTIVE USING THE METRICS
3708
MEASURE A PERFORMANCE OF THE APPLICATION FROM A NETWORK PERSPECTIVE USING THE METRICS
3712
MEASURE A PERFORMANCE OF THE APPLICATION FROM A SERVER PERSPECTIVE USING THE METRICS
3710

Figure 37

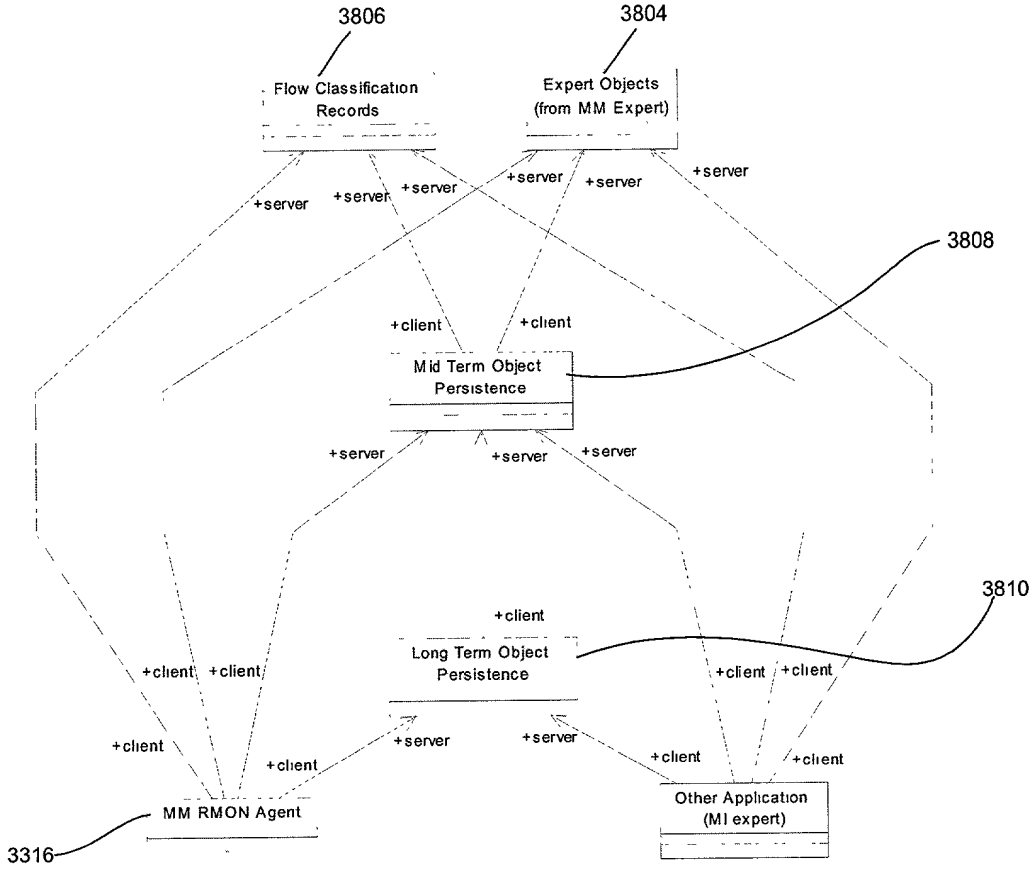

Figure 38

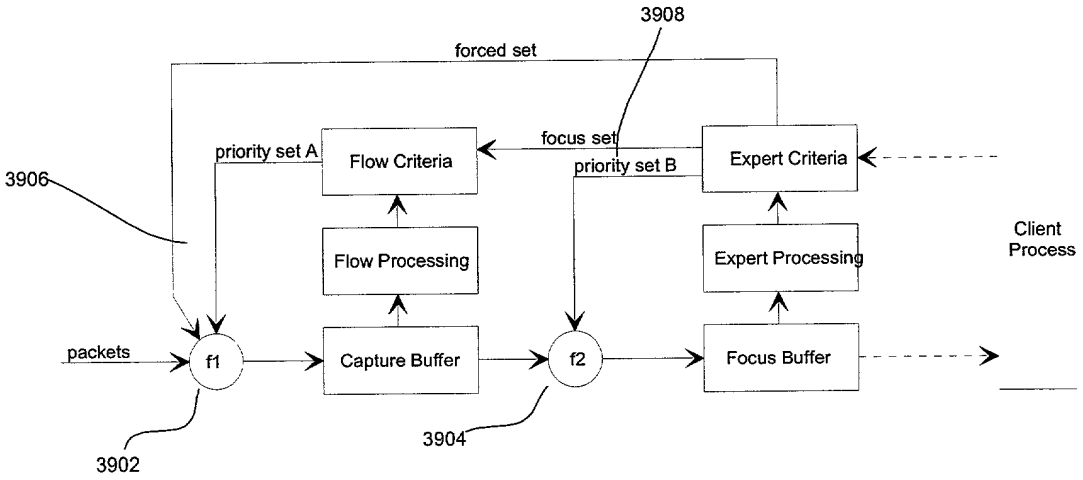

Figure 39

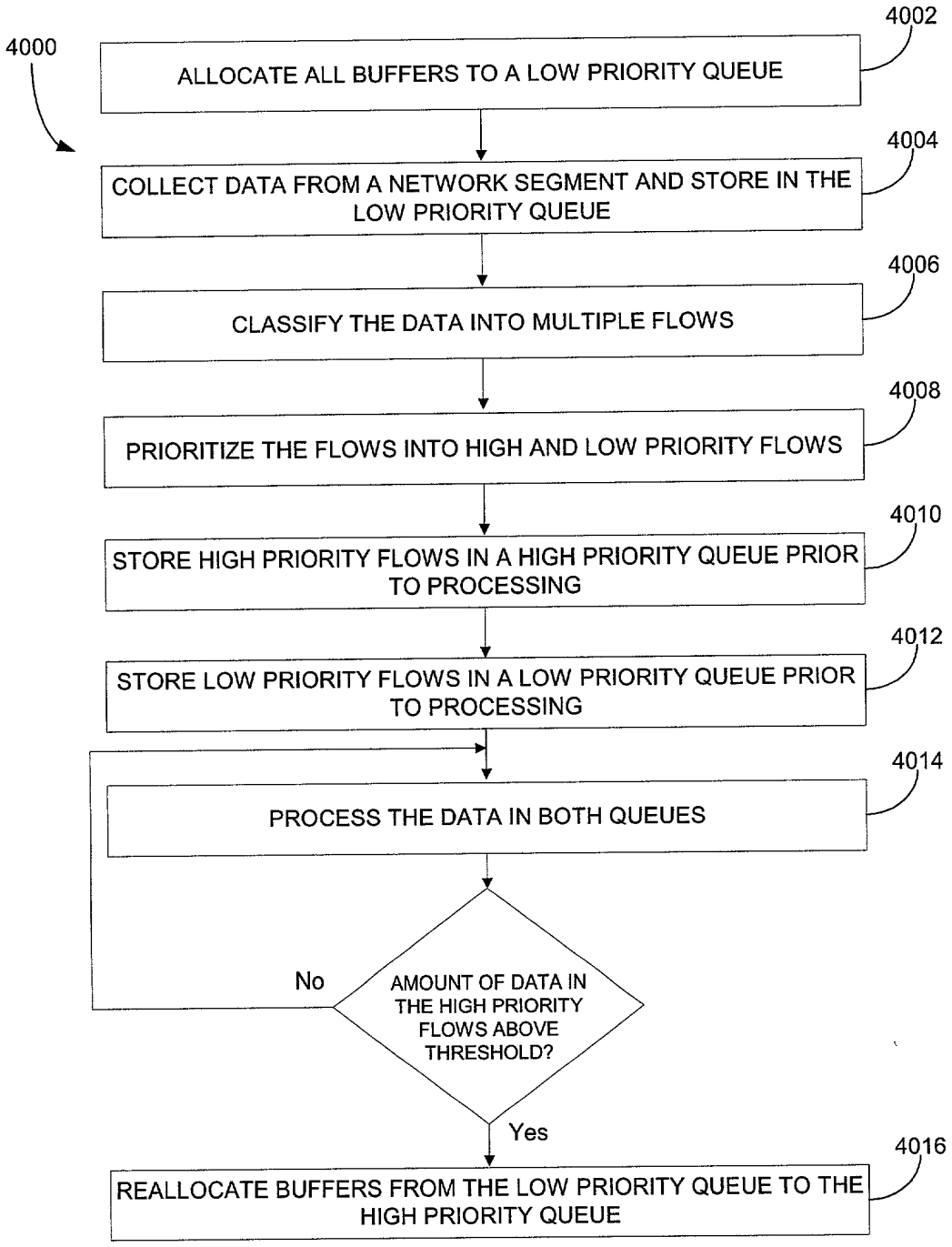
4000
4002
ALLOCATE ALL BUFFERS TO A LOW PRIORITY QUEUE
4004
COLLECT DATA FROM A NETWORK SEGMENT AND STORE IN THE LOW PRIORITY QUEUE
4006
CLASSIFY THE DATA INTO MULTIPLE FLOWS
4008
PRIORITIZE THE FLOWS INTO HIGH AND LOW PRIORITY FLOWS
4010
STORE HIGH PRIORITY FLOWS IN A HIGH PRIORITY QUEUE PRIOR TO PROCESSING
4012
STORE LOW PRIORITY FLOWS IN A LOW PRIORITY QUEUE PRIOR TO PROCESSING
4014
PROCESS THE DATA IN BOTH QUEUES
No
AMOUNT OF DATA IN THE HIGH PRIORITY FLOWS ABOVE THRESHOLD?
Yes
4016
REALLOCATE BUFFERS FROM THE LOW PRIORITY QUEUE TO THE HIGH PRIORITY QUEUE

Figure 40

LEGEND

1) Packet transferred to capture control
2) Address compared in CAM
3) If entry match: priority queue, else: normal queue
4) Notify flow processor of entry
5) Flow proc retrieves pkt & classifies
6) Flow record updated in shared mem, expert include flag checked
7) If headroom, add addr to priority CAM
8) If expert include flag set in flow record, initiate DMA to focus buffer
9) Write parse descriptor to shared mem
10) Expert retrieves parse descriptor
11) Expert retrieves flow record
12) Expert retrieves packet from focus buf
13) Expert builds/updates object(s)
14) Expert sets include flag in flow record (if interesting)
15) Object is persisted, packet is prepended and persis
16) Event/object descriptor built for app svr (optional)
17) Descriptor retrieved by app svr (optional)
18) Objects or packets are retrieved by app svr (optiona

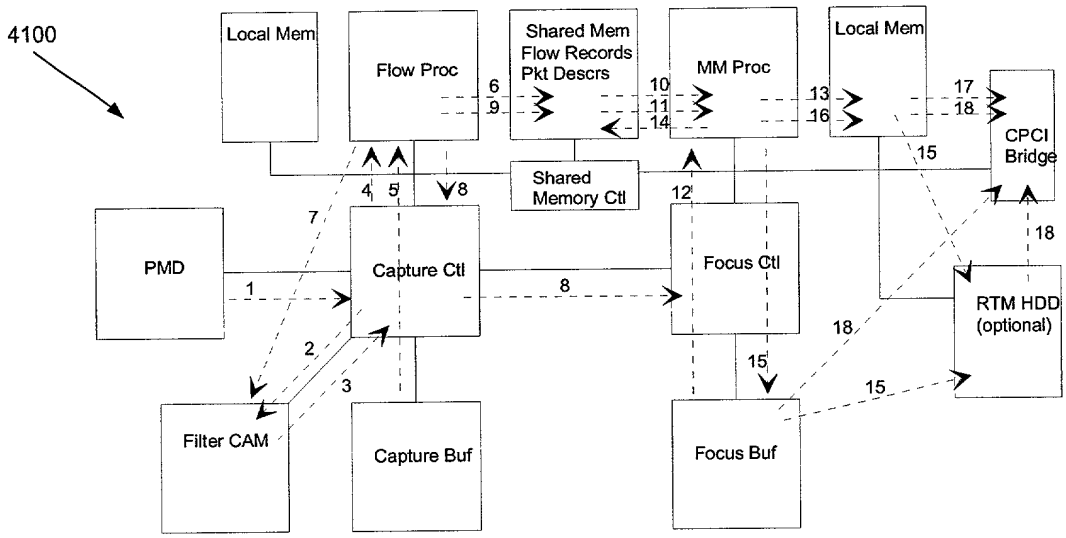

Figure 41

4200

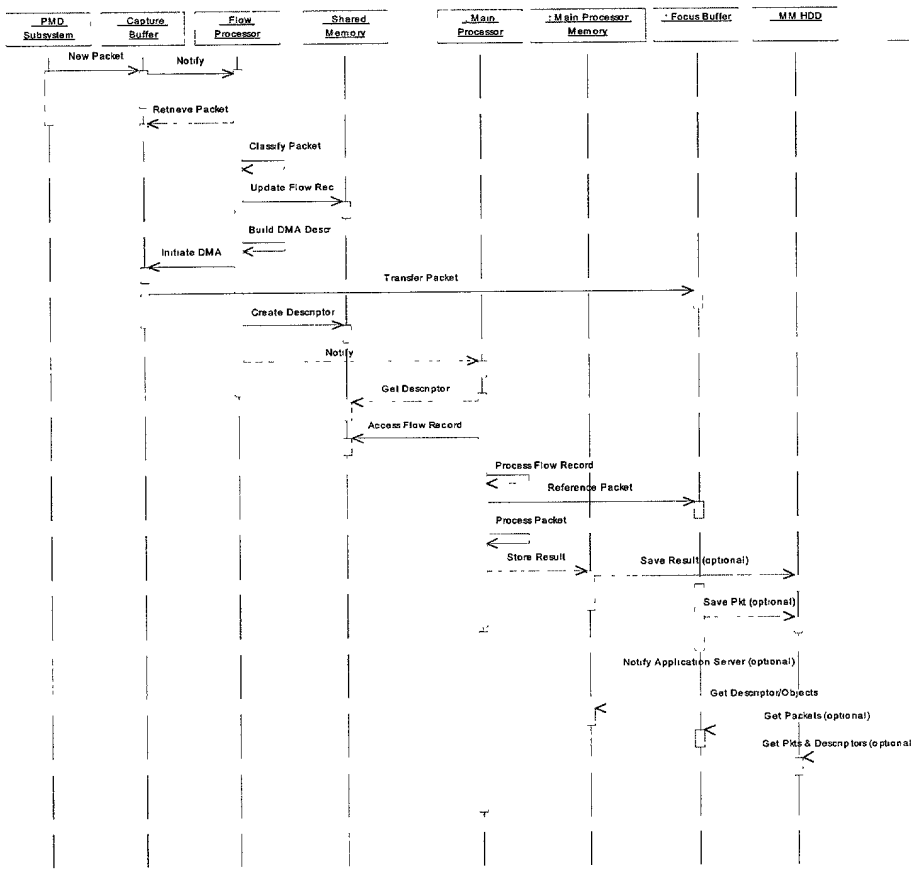

Figure 42